

I. INTRODUCTION

Claims 1, 7 and 8 have been amended, and claims 13 and 14 have been added. Claims 2-6 were previously cancelled without prejudice. Accordingly, claims 1 and 7-13 are now under consideration in the present application. Provided above, please find a claim listing indicating the claim amendments and current status of the claims on separate sheets so as to comply with the requirements set forth in 37 C.F.R. § 1.121. It is respectfully submitted that no new matter has been added.

II. REJECTION UNDER 35 U.S.C. § 112 SHOULD BE WITHDRAWN

Claims 1, 7 and 8 stand finally rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite. Specifically, the Examiner alleges that claim 1 is indefinite because claim 1 recites hot rolling followed by cooling the rail in an upright position *when* a specified surface temperature range is reached, but the Examiner alleges that the specification describes cooling the rail in an upright position *until* a specified surface temperature is reached.

Independent claim 1 has been amended to recite, *inter alia*, naturally cooling the rail when a surface temperature of a head of the rail is in a temperature range of approximately 400° C. to approximately 250° C. The specification provides clear support for the recited subject matter. In paragraph [0046] of the published application of the present application, it is described that:

“Then, all of the rails were laid onto their sides, and were left (natural cooling) until the surface temperature of the head part of the rail reached 400° C. Afterwards, all of the rails were stood upright, and were left while the surface temperature of the head part of the rail dropped from 400° C. to 250° C.”

Further, paragraphs [0028] and [0029] clearly describe this temperature range, and paragraph [0029] describes that:

“Therefore, it may be preferable to perform natural cooling in this temperature range without insulating the rail 1 or cooling it in an accelerated manner.”

Accordingly, it is clear that the specification provides clear support for the natural cooling of the rail in an upright position when the surface temperature of the head of the rail is in this temperature range.

The Examiner alleges that claim 7 does not clearly recite the invention. As the Examiner shall ascertain, amended claim 7 has been amended to recite, *inter alia*, maintaining the rail on the cooling bed in the upright position and mechanically restraining a foot of the rail when the surface temperature of the head of the rail is in a temperature range of approximately 800° C. to approximately 400° C. Applicants respectfully submit that such recitation is not indefinite.

The Examiner alleges that claim 8 is indefinite because claim 1 recites without a use of both an insulation and an accelerated cooling procedure, and that claim 8 recites an accelerated cooling procedure. However, amended independent claim 1 recites without a use of an accelerated cooling procedure when a surface temperature of a head of the rail is in a temperature range of approximately 400° C. to approximately 250° C., and amended claim 8 recites an accelerated cooling procedure when i) the surface temperature of the head of the rail reaches a temperature range of approximately 550° C. to 450° C., or ii) a surface temperature of the foot of the rail reaches a temperature range of approximately 550° C. to 450° C.

The Examiner further alleges that claim 8 is indefinite because claim 8 recites accelerated cooling is performed *when* a surface temperature is in a temperature range, and that the specification teaches performing accelerated cooling *until* a temperature range is reached. Claim 8 has been amended to recite, *inter alia*, accelerated cooling the head and a foot of the rail maintained in the upright position until one of (i) the surface temperature of the head of the rail reaches a temperature range of approximately 550° C. to 450° C., or (ii) a surface temperature of the foot of the rail reaches a temperature range of approximately 550° C. to 450° C. while the foot of the rail is mechanically restrained on the cooling bed by a clamping apparatus.

Accordingly, Applicants respectfully request that the 35 U.S.C. § 112, second paragraph rejection of claims 1, 7 and 8 be withdrawn.

III. REJECTIONS UNDER 35 U.S.C. § 103 SHOULD BE WITHDRAWN

Claims 1 and 10-12 stand finally rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Japanese Patent 590031824 (hereinafter “JP-824”). Claims 1, 7 and 10-12 stand finally rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 1,456,944 issued to Stenbol (hereinafter “Stenbol”), in view of U.S. Patent No. 6,432,230 issued to Kock et al. (hereinafter “Kock”).

Applicants respectfully assert that JP-824, and the alleged combination of Stenbol and Kock, fails to teach or suggest the subject matter recited in amended independent claim 1, and the claims which depend therefrom, for at least the reasons provided herein below.

“To reject claims in an application under Section 103, an examiner must show an unrebutted *prima facie* case of obviousness.” *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998). The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Indeed, to sustain a rejection under 35 U.S.C. § 103(a), there must be some teaching, other than the instant application, to alter the prior art to arrive at the claimed invention. “The problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem.”

Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 679 (Fed. Cir. 1998).

The objective standard for determining obviousness under 35 U.S.C. § 103, as set forth in *Graham v. John Deere*, Co., 383 U.S. 1 (1966), requires a factual determination to ascertain: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; and (3) the differences between the claimed subject matter and the prior art. Based on these factual inquiries, it must then be determined, as a matter of law, whether or not the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the alleged invention was made. *Graham*, 383 U.S. at 17. Courts have held that there must be some suggestion, motivation or teaching of the desirability of making the combination claimed by the applicant (the “TSM test”). See *In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992). This suggestion or motivation may be derived from the prior art itself, including references or

disclosures that are known to be of special interest or importance in the field, or from the nature of the problem to be solved. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Although the Supreme Court criticized the Federal Circuit's application of the TSM test, see *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, (2007) the Court also indicated that the TSM test is not inconsistent with the *Graham* analysis recited in the *Graham v. John Deere* decision. *Id.*; see *In re Translogic Technology, Inc.*, No. 2006-1192, 2007 U.S. App. LEXIS 23969, *21 (October 12, 2007). Further, the Court underscored that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR*, 127 S. Ct. at 1741. Under the precedent established in *KSR*, however, the presence or absence of a teaching, suggestion, or motivation to make the claimed invention is merely one factor that may be weighed during the obviousness determination. *Id.* Accordingly, the TSM test should be applied from the perspective of a person of ordinary skill in the art and not the patentee, but that person is creative and not an automaton, constrained by a rigid framework. *Id.* at 1742. However, "the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure." *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

The prior art cited in an obviousness determination should create a reasonable expectation, but not an absolute prediction, of success in producing the claimed invention. *In re O'Farrell*, 853 F.2d. 894, 903-04 (Fed. Cir. 1988). Both the suggestion and the expectation of success must be in the prior art, not in applicant's disclosure. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1207 (Fed. Cir. 1991)

(citing *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988)). Further, the implicit and inherent teachings of a prior art reference may be considered under a Section 103 analysis. See *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

Secondary considerations such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results, if present, can also be considered. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983). Although these factors can be considered, they do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

To establish obviousness, the prior art references must be evaluated as a whole for what they fairly teach and neither the references' general nor specific teachings may be ignored. *Application of Lundsford*, 357 F.2d. 385, 389-90 (CCPA 1966). A reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d. 281, 296 (Fed. Cir. 1985).

Amended independent claim 1 recites a rail manufacturing method, comprising a) hot-rolling a billet into a form of a rail having a high temperature, and b) maintaining the rail on a cooling bed in an upright position without a use of both (i) an insulation and (ii) an accelerated cooling procedure and naturally cooling the rail when a surface temperature of a head of the rail is in a temperature range of approximately 400° C. to approximately 250° C., wherein the curvature of the rail in a vertical direction can be controlled through a weight of the rail. Accordingly, amended independent claim 1 does not use an insulation procedure when the surface temperature of the head of the rail is in a temperature range of approximately 400° C. to approximately 250° C.

JP-824, on the other hand, describes a cooling method of a rail in which the rail is insulated (heat insulation) by a steel plate or a blanket (See JP-824, Figs. 1 and 2). JP-824 clearly describes when a high temperature rail 1 formed by hot rolling is cooled, an iron plate 4 is placed under the rail and the rail is allowed to cool, and that a blanket 6 having 50mm thickness can be laid under the rail in place of the plate 4. (See JP-824, Abstract). Accordingly, JP-824 clearly requires and describes an insulation procedure during the cooling of the rail, which is specifically excluded in amended independent claim 1.

Amended independent claim 1 recites, *inter alia*, maintaining the rail on a cooling bed in an upright position without a use of both (i) an insulation and (ii) an accelerated cooling procedure and naturally cooling the rail. Since the rail is maintained on a cooling bed in an upright position, the gravity acting on the rail overcomes the heat stress within the rail. As a result, e.g., it is possible to avoid curvature of the rail.

On the other hand, in JP-824, since the bottom of the rail is insulated by the steel plate (or the blanket), a temperature difference between the head and the foot of the rail is not caused, and the rail can be cooled straight. In amended independent claim 1, however, because the rail is maintained upright and naturally cooled in the recited temperature range, it is not necessary to insulate the foot of the rail and the rail can still be straight and naturally cooled. Accordingly, JP-824 fails to teach or suggest the recitations of amended independent claim 1.

Stenbol describes a rail that is vertically suspended by an upending beam C and a clamp. (See Stenbol, Figs. 1-2, and page 1, lines 84-107). Amended independent

claim 1 recites a rail manufacturing method, comprising, *inter alia*, maintaining the rail on a cooling bed in an upright position. The rail of Stenbol is not maintained on a cooling bed, as recited in amended independent claim 1, but is vertically suspended. Accordingly, Stenbol does not teach or suggest this recitation of amended independent claim 1. Kock does not cure the deficiencies of Stenbol, and the Examiner does not allege that it does.

Regarding the 35 U.S.C. § 103(a) rejections of the dependent claims, Applicant respectfully asserts that JP-824 or Stenbol, taken individually or in combination with Kock, in no way teach or suggest the explicit recitations of amended independent claim 1. Accordingly, the claims which depend from amended independent claim 1 are also patentable over the references relied upon by the Examiner at least because these publications fail to teach or suggest the recited features of amended independent claim 1.

Therefore, for at least the reasons as presented herein above, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1 and 10-12 as being allegedly unpatentable over JP-824, and withdrawal of the 35 U.S.C. § 103(a) rejection of claims 1, 7 and 10-12 as being allegedly unpatentable over Stenbol, in view of Kock.

IV. NEW CLAIMS 13 and 14

New claims 13 and 14 have been added. Support for the new claims can be found in the originally-filed specification and drawings. It is respectfully requested that a

confirmation of patentability of these claims be provided in the next communication for this application to Applicants' representatives.

New claims 13 and 14 depend from amended claims 7 and 8, respectively, which depend from amended independent claim 1, and are thus patentable at least for all the reasons as set forth above with regard to amended independent claim 1.

Further, new claim 13 recites that step c) of amended claim 7 is performed before step b) of amended independent claim 1, and new claim 14 recites that step d) of amended claim 8 is performed before step b) of amended independent claim 1. Such subject matter is not taught or suggested by any one or combination of JP-824, Stenbol and Kock.

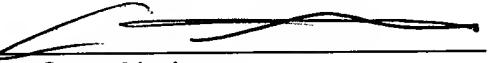
V. **CONCLUSION**

In light of the foregoing, Applicants respectfully submit that claims 1 and 7-14 are in condition for allowance. Prompt consideration, reconsideration and allowance of the present application are therefore earnestly solicited. If any issues remain outstanding, the Examiner is invited to contact the undersigned via the telephone number provided below.

Respectfully submitted,

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